

- I. Project Title: **Identification and Curation of Larval Fish by Colorado State University Larval Fish Laboratory.**
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- III. Project Summary: This ongoing project provides for (1) the identification and processing of preserved fish from the Interagency Standardized Monitoring Program (ISMP) and (2) the long-term care, backlog cataloging, and accessibility of preserved fish from Upper Colorado River Basin (UCRB) collections. Sixty-three fall 2000 ISMP collections (353 lots) were processed. We added 2,028 new lots to the Larval Fish Laboratory (LFL) Collection and now maintain and manage over 77,000 lots of UCRB fish collected since 1976 (an estimated 3.95 million specimens). Work on backlogged pre-1994 collections was finally completed with the cataloging, relabeling, and reorganization of 6,101 lots.
- IV. Study Schedule: Fall ISMP collections are processed and the resultant data provided to the source agencies and Interagency Database Management Program (IDMP) as soon as possible after the collections are received. General collection maintenance (e.g., fluid level and container checks) is conducted early each fiscal year as time and personnel permit and collection management is ongoing as needed. Storage upgrading and cataloging of backlog pre-1994 collections, which began under this project in FY 97, is conducted variously throughout the year and was finally scheduled for completion by the end of FY2001.
- V. Relationship to RIPRAP: This project is related to General Recovery Program Support Action Plan V (monitor populations and habitat and conduct research to support recovery actions, research, monitoring, and data management). Identification and processing of ISMP collections contribute to Task V.A.1 (measure and document population and habitat parameters to determine status and biological response to recovery actions –conduct standardized monitoring program). The remainder of the project specifically addresses Task V.E (provide for long-term care, cataloging, and accessibility of preserved specimens) and, in that preserved specimens are the ultimate natural history database, Task V.A.2 (. . .–conduct interagency data management program to compile, manage, and maintain all research and monitoring data collected by the Recovery Program).
- VI. Accomplishments of FY 2001 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings: The FY 2001 goals and objectives of this ongoing project have been met. However, as part of ongoing curation, we have not yet replaced the cataloging computer

(printer has been replaced) and conversion of the LFL collection catalog and management program from DOS-based MUSE to Windows-based SPECIFY has met with some difficulties and for logistic reasons will not be completed until FY2002. Similarly, the delivery of updated printed and *dBase* versions of the collection catalog to the Interagency Database Management Program (IDMP) after completion of backlog cataloging also has been deferred to FY2002 (backlog cataloging was completed a couple weeks after the end of FY 2001). No additional funding will be required for these delayed tasks.

Fall 2000 ISMP collections were identified, counted, measured, cataloged, and stored, and the resultant data recorded in databases and summarized on schedule (see Appendix A for summary of results). Printed data reports and copies of computer database files (*dBase*) for these collections were submitted in February 2001 to the source agencies, Colorado Division of Wildlife (CDOW, Grand Junction, William Elmblad) and Utah Division of Wildlife Resources (UDWR, Moab, Steve Meisner), and to the U.S. Fish and Wildlife Service (USFWS, Grand Junction, Frank Pfeifer and Charles McAda); copies of the database files were submitted also to IDMP (Charles McAda).

Curation of larval and other small-fish collections in FY 2001 included: (1) annual fluid-level and container checks for over 77,000 lots of preserved UCRB specimens, (2) maintenance of the collection catalog, (3) management of access to specimens and associated data, and (4) the fifth of a five-year effort (FY 97 through FY 2001) to complete cataloging and upgraded care and management of backlogged collections dating back to 1976 (about 33,000 lots at the beginning of this effort in FY 97). The latter effort includes switching specimens to new containers and preservative if necessary, relabeling each lot with standard-format cataloged-collection labels, and systematically reorganizing the lots on collection shelving for easy access. As of September 30, 2001, a total of 77,364 lots of fish have been cataloged as part of the LFL Collection (highest used collection number, 77906, less 542 unused numbers). Of these, 5,253 backlog and 2,028 recently processed UCRB lots (7,281 total) were added to the cataloged collection during FY 2001. An additional 848 lots of backlog collections were added to the catalog as of 11 October 2001, thereby essentially completing backlog cataloging operations (any sufficiently documented pre-1994 collections discovered hereafter will be handled as part of ongoing collection curation. Recent collections processed by LFL are cataloged as part of the cost of collection processing. Appendix B lists the study-year sets of recently processed and backlog collections that were cataloged during FY 2001, and subsequently through 11 October 2001.

Efforts to assure the future permanency of the collection continued in FY 2001. Prospects remain promising for a move of the LFL Collection, along with other Colorado State University natural history research collections, to campus facilities that are to be renovated specifically for these collections. The move is expected in about three years.

Current space for LFL and our Collection in the Wagar Building was renovated during late spring through fall 2001 (almost finished). During renovation, both our lab and

collection had to be moved to temporary locations within the building last May and back again in August and September. Half of the collection is now housed in Rm 33 (basement of west wing with LFL) and the other half in Room 09A (basement of east wing of Wagar building).

VII. Recommendations: We recommend continued annual support of Project 15 with sufficient funds for processing newly preserved collections covered by this project (currently just fall ISMP collections) and on-going maintenance and management (curation) of all UCRB specimens held by LFL.

VIII. Project Status: On-track and ongoing.

IX. FY 2001 Budget

- A. Funds provided: \$48,845
- B. Funds expended: \$39,534
- C. Difference: \$ 9,311 (Logistical delays—see Section VI, Paragraph 1)
- D. Percent of the FY 2001 work completed, and projected costs to complete:  
81%, \$9,311
- E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission: Preserved fish data for Fall 2000 ISMP collections were submitted on February 19, 2001, in a printed data report and *dBase* files to Colorado Division of Wildlife, Utah Division of Wildlife Resources, and USFWS, and as *dBase* files to IDMP. Updated printed and *dBase* versions of the LFL Collection catalog (selected fields) to IDMP have been delayed and will be submitted during FY2002.

XI. Signed:     Darrel E. Snyder                              December 6, 2001      
Principal Investigator                                      Date

Signed:     Diane L. Miller                              December 6, 2001      
Principal Investigator                                      Date

Signed:     Kevin R. Bestgen                              December 6, 2001      
Principal Investigator                                      Date

## APPENDIX A:

Brief summary of results for preserved fall ISMP seine collections, Colorado River and lower Green River, September 18-21, 2000 (extracted from LFL data report submitted to responsible agencies on February 19, 2001).

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This report covers the preserved fishes in 63 collections taken during the 2000 fall monitoring program (ISMP)—36 from the Colorado River in Colorado (river miles 184.2-140.0, collection numbers CO01-CO36), 21 from the Colorado River in Utah (river miles 108.8-5.9 above the confluence with the Green River, collection numbers YC01-YC64), and 6 from the lower Green River in Utah (river miles 118.9-1.4, collection numbers YG01-YG71). The specimens have been cataloged (LFL 72295-72547) and are stored as part of the Larval Fish Laboratory Collection for voucher and future study (e.g., identification of humpback chub, food habits, condition, parasites).

In all, the collections received contain 52,143 preserved fish (an average of 828 specimens per collection) representing five families and 15 species. Of those fish, 5,155 are from the upper Colorado River reach (UCRR), 42,769 from the lower Colorado River reach (LCRR), and 4,219 from the lower Green River reach (LGRR). Overall, just 0.1% of the fish are native species (3 cyprinids and 2 catostomids); 0.7% for the UCRR, 0.04% for the LCRR, and 0.1% for the LGRR. Cyprinids (7 species) account for 99.8%, catostomids (3 species) 0.05%, and other families (5 species) 0.16% of all fish received. For the UCRR the respective percentages are 98.5%, 0.5%, and 1.0%; for the LCRR 99.9%, 0.0% (2 specimens), and 0.1%; and for the LGRR 99.9%, 0.0% (no specimens), and 0.1%. Percentage compositions for species representing 1% or more of the preserved collections are: from the UCRR—fathead minnow 58%, red shiner 29%, sand shiner 11%, mosquitofish 1%, carp 1%, and *Gila* species 1%; from the LCRR—sand shiner 54%, red shiner 42%, and fathead minnow 3%; and from the LGRR—red shiner 78%, sand shiner 16%, and fathead minnow 6%.

A total of 19 Colorado pikeminnow were preserved in these collections. All but one (24-45 mm TL) were taken from the LCRR at river miles 89.9 to 20.0. The remaining specimen (47 mm TL) was collected in the LGRR at river mile 28.8.

A total of 26 *Gila* species (30-52 mm TL) were taken in the UCRR at river miles 184.2 to 155.0. The vast majority are probably roundtail chub based on dorsal and anal fin ray counts of 9 and 9. The remainder (5 specimens) have counts of 9 dorsal and 10 anal rays and are probably either roundtail chub or humpback chub. No chub were preserved in the LCRR or LGRR collections.

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APPENDIX B:

Study-year sets of Upper Colorado River Basin collection-species lots cataloged as part of the Colorado State University Larval Fish Laboratory Collection between October 1, 2000 and October 11, 2001 (total of 9,032 UCRB lots were cataloged including 6,101 lots from back-logged, pre-1994 collections; 8,184 and 5,253 lots, respectively, as of September 30, 2001).

Beginning Cat. No.	Field Numbers	Description of Sample Sets
69678	BLM/LFL-76W	BH Study Series (wild)*
69678	BLM/LFL-76W, 76Y, 77W, 77Y; CDOW/LFL-78W, 78Y, 79W, 79Y, 77CG, 78CG, 79CG	BH Reference Series, Collected
69909	LFL-CULT-BH7601, 7801 to 7839	BH Reference Series, Cultured
69949	BLM/LFL-76W, 76Y, 77W, 77Y; CDOW/LFL-78W, 78Y, 78C, 78C-R, 78G, 79Y, 79W, 79G,	FM Reference Series, Collected
70135	LFL-CULT-FM7601, 7801 to 7839	FM Reference Series, Cultured
70244	BLM/LFL-76Y, 77Y; CDOW/LFL-78Y, 79Y; CDOW/CSU-79P, 79CLP	WS Reference Series, Collected
70332	LFL-CULT-WS7901 to 7970	WS Reference Series, Cultured
70402	(unused)	
70403	LFL-CULT-RZ8001 to 8046, 9201 to 9204; DNFH-81-1, 82A-1 to 6, 82B-1 to 4, 83-01; ASUCES-43019-1 to 2; ASUCES-84; Z70542 to Z70545	RZ Reference Series, Cultured
70551	(unused)	
70559	FWS/V-00RZ-047	00 RZ Monitoring, Green R, UT (add,below)

Beginning Cat. No.	Field Numbers	Description of Sample Sets
70560	UDWR-ABL (CLF,GRL,HCL, MCL, or SRL)9901 to 99116; FWS-STD99006 and 99029	99 RZ Light-trap, Green R., UT
71148	UDWR-AB97L065, AB97L070, MC97L070	97 RZ Light-trap, Green R., UT*
71153	FWS/V-00RZ-007 to 095	00 RZ Monitoring, Green R., UT
71341	BR-ANIMASR-01 to 25	00 Seine Collections, Animas R. CO
71438	LFL-00YA-6241 to 8253; LFL-00GR-7271 to 8103	00 Larvae, Drift Net, Echo Park, DNM, Yampa & Green R., CO
72295	FWS/GJ-00Y-CO01 to CO36	00 YOY, Fall ISMP, Seine, Colorado R., CO
72438	FWS/GJ-00Y-YC01 to YG71	00 YOY, Fall ISMP, Seine, CO&GR R., UT
72548	(unused)	
72551	BLM/LFL-76W, 76Y; CDOW/LFL-77CG, 78CG, 78/79W, 79Y, 79C, 79G	SD Reference Series, Collected
72688	BLM/LFL-77Y; CDOW/LFL- 77CG, 78Y, 78CG, 79Y, 79C	SS Reference Series, Collected
72781	BLM/LFL-77W; CDOW/LFL- 77CG, 78CG, 79C, 79G	RS Reference Series, Collected
72850	BLM/LFL-76/77W, 76Y, 77Y; CDOW/LFL-77CG, 78CG, 78Y, 79W, 79Y, 79C, 79G	FH Reference Series, Collected
72988	BLM/LFL-76/77Y; CDOW/LFL-78Y, 79Y, 79C	RD Reference Series, Collected
73048	BLM/LFL-76/77W,76/77Y; CDOW/LFL-77CG, 78CG, 79Y, 79G	CP Reference Series, Collected
73083	BLM/LFL-76W, 76Y, 77W, 77Y; CDOW/LFL-78W, 78Y, 79W, 79Y	MS Reference Series, Collected
73130	CDOW/LFL-79G	SD Reference Series, Collected*

Beginning Cat. No.	Field Numbers	Description of Sample Sets
73136	CDOW/LFL-77CG, 79C	GA Reference Series, Collected
73168	BLM/LFL-77Y; CDOW/LFL-77CG, 78CG	PK Reference Series, Collected
73190	CDOW/LFL-77CG, 78CG, 79C	BB Reference Series, Collected
73198	CDOW/LFL-77CG, 79C	CC Reference Series, Collected
73204	CDOW/LFL-79C	BG Reference Series, Collected
73207	CDOW/LFL-77CG, 78CG, 79C	GS Reference Series, Collected
73227	CDOW/LFL-78CG	LG Reference Series, Collected
73228	CDOW/LFL-77G, 78G, 79W, 79Y, 79C	RT Reference Series, Collected
73320	CDOW/LFL-78C; LFL-CULT- CS80; WBNFH-CULT-CS80	CS Reference Series, Collected
73339	(unused)	
73345	LFL-Lodore-G01 to Y15	94-96 Lodore Canyon Study, GR&YA R., CO
73992	FWS/V-95LS-1001 to 6034	95 Little Snake R. Study, CO
74248	(unused)	
74251	(non-UCRB collections)	
74265	LFL-00YA-82352	00 Seine (w/DR collections), Yampa R., CO
74276	LFL-00GR-82351, 82452 to 53	00 Seine (w/DR collections), Green R., CO
74304	LFL-90YA-6291 to 8013	90 Drift Net, Echo Park, Yampa R., CO
74680	LFL-90YA-63051 to 71401	90 Seine&Dip Net, Echo Park, Yampa R., CO
74706	LFL-90GR-6291 to 7313	90 Drift Net, Green R., Jensen, UT
74976	LFL-90YA-7171, 7172, 7103	90 Drift Net, Echo Park, Yampa R., CO*
74979	(unused)	
74985	LFL-91YA-6301 to 8053	91 Drift Net, Echo Park, Yampa R., CO

Beginning Cat. No.	Field Numbers	Description of Sample Sets
75421	LFL-91GR-6191 to 8032	91 Drift Net, Green R., Jensen, UT
75886	(unused)	
75890	LFL-92YA-6252 to 8023, 626A2 to 717C25	92 Drift Net, Echo Park, Yampa R., CO (mostly non-CS)
76801	LFL-92YA-626A1 to 8011	92 Drift Net, Echo Park, Yampa R., CO (CS)
77040	(unused)	
77045	LFL-92GR-6211 to 8121	92 Drift Net, Green R., Jensen, UT
77644	LFL-93YA-7011 to 8273	93 Drift Net, Echo Park, Yampa R., CO
78357	LFL-93YA-710S to 813S	93 Seine (w/DR), Echo Park, Yampa R., CO
78370	LFL-93GR-6223 to 8203	93 Drift Net, Green R., Jensen, UT
78748	LFL-93YG-7301 to 8062	93 Drift Net, Echo Park, Green R., CO
78755	(next set to be cataloged)	

\* Additional lots belonging to a previously cataloged sample set.